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First Impressions of the Beta Haemolytic Streptococcus Infection of Swine

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During the years 1937-40 we isolated the *beta*-haemolytic streptococcus (for which we have adopted the more convenient contraction " B.H.S.") from 27 pigs, which were distributed among 12 farms within the triangle formed by Yorkshire, Kent and Somerset. When pieced together the field and laboratory records of these 12 outbreaks form an impressionist sketch of a specific infection due to the B.H.S., which hitherto does not appear to have been described.

The material, from which the B.H.S. was recovered, comprised nine post-mortems made at the laboratory, four post-mortems in the field from which certain tissues were sent to the laboratory, the vaginal swabs of eleven sows, the tonsil swabs of two stores and the mammary exudate of a newly-farrowed sow. Of these 27 strains three were not grouped, while 24 comprised the following Lancefield groups: 19 C, three L, one E and one case produced both C and L. The breeds comprised Large and Middle Whites and Berkshires. Four of the farms (1, 3, 11 and 12) were restricted to the indoor feeding of stores. Of the five breeding farms (4, 5, 6, 7 and 10) the sows and litters were on free-range pasture; those on farm 8 were confined to movable pens on pasture; weaners (about 8 weeks of age) were removed to other premises or sold. Farms 2 and 9 carried their breeding stock on pasture and fattened their weaners in buildings.

SYMPTOMATOLOGY AND PATHOLOGY

Septicaemia Syndrome.—A rapidly fatal septicaemia was characterised by a sudden onset of complete anorexia and fever; temperatures up to 106° F. were recorded. Sucklings lay prostrate with shallow breathing, blanched mucous membranes and incontinence of urine and faeces (671, 151 and 202, Table 1). In some cases the faeces contained freshly shed blood. In store pigs some degree of mental excitement and inco-ordination of gait usually preceded the collapse, when acute congestion of the lungs became the almost invariable clinical picture (152 and 785, Table 1). Death following a deepening coma usually occurred within 48 to 72 hours of the onset. The only example of this syndrome among adults was the stud boar of farm 8 (643, Table 1). Three days after contact with a known infected sow he ignored his food and his temperature was 105·5° F. Within a few hours he was very excited; later in the day he became delirious, throwing himself about his pen; about the 24th hour he collapsed. When examined about the 48th hour he was comatose and was shot. At the *post-mortem* examination the veterinary surgeon in attendance found generalised acute congestion, particularly of the lungs, and a swollen spleen. These two viscera were sent to the laboratory; the tense, pale, softened spleen produced pure cultures of the B.H.S. group C; the cultures from the congested lungs, into which stomach contents had been aspirated *ante-mortem*, proved too heavily contaminated for diagnosis.

The post-mortems of the three sucklings revealed anaemia, distension of the right heart with clot composed largely of coagulated serum, albuminous degeneration of the liver, a trace of hydropericardium, a slight enlargement and oedema of the mesenteric glands in 202 and early sero-fibrinous peritonitis with congestion of the borders of the posterior lobes of the lungs in 151. The *post-mortem* examination of the store pig 152 revealed acute congestion of the lungs with frothy fluid exudate in the bronchioles and bronchi and hyperplasia with oedema of all the lymphatic glands. From the store pig 785 we received the lungs, which resembled those of 152 save for an increase of bronchial exudate flecked with blood. The 12-weeks-old store 513 revealed slightly more advanced lesions, *viz.*, acute pneumonia with red hepatisation of scattered lobules, a thicker and more tenacious bronchial exudate and sero-fibrinous peritonitis. We received the lungs, spleen and femur of this pig; the cultures from the lungs and spleen were too contaminated for diagnosis; from the reddened marrow of the femur the B.H.S. group C was isolated.

A less acute onset of the syndrome was observed in some sucklings which survived to the seventh or tenth day. Following a premonitory fever they showed some signs of an awakening desire to suckle until with increasing lethargy, weakness, anaemia, diarrhoea and melaena they sank into a fatal coma. We received two of these cases for *post-mortem* examination; 699 revealed pronounced anaemia, congestion of the lungs and acute inflammation, together with numerous petechiae of the duodenum and jejunum. Profound anaemia characterised the second case (280); whereas cultures from its lungs, liver and spleen were sterile, those from the tonsil were positive.

Catarrhal Syndrome.—In a minority of cases the catarrhal syndrome developed after some three or four days of a premonitory acute fever. In most examples of this syndrome the first evidence of ill-health was lethargy, catarrhal conjunctivitis with a mucoid or muco-purulent exudate, a watery discharge from the nostrils and one or two degrees of fever. Usually enlargement of the superior cervical lymphatic glands was observed, also a hoarse voice and periodic attacks of a dry, tight cough " as if a crumb had gone down the wrong way." By the end of the first week emaciation was almost invariable and a common sign was a mild jaundice which in one store persisted for two weeks. In a few cases the swelling of the cervical glands was rapid, leading to local oedema with pressure dyspnoea and dysphagia, causing the patient to sit up on its haunches as if attacked by anthrax.

An example of the catarrhal syndrome after about one week's duration was 1052—one of nine recently purchased 12-weeks-old stores from farm 11. Three of the batch had died. The patient showed conjunctival catarrh, cervical adenitis, faint jaundice, pustular dermatitis, emaciation and a normal temperature. From a tonsil swab the B.H.S. group C was isolated. A tonsil swab from a 12-weeks-old store (900) on farm 12 produced the B.H.S. group L. It was one of a batch of 60 stores newly arrived from market, of which about 40 developed various stages of the catarrhal and dermatitis syndromes. Eleven days after he had been swabbed this pig, owing to rapid emaciation and weakness, was slaughtered; at the abattoir the veterinary surgeon in the case found the lungs studded with abscesses containing a pale yellow caseation, enlarged mediastinal lymphatic glands and a secondary empyema.

Suppuration of the enlarged lymphatic glands in the more chronic stages of the catarrhal syndrome was seen in 458, one of a batch of 20 stores, aged 20 weeks, on farm 1. Of the 20 stores

TABLE I

Showing whence the B.H.S. was isolated in 13 post-mortems, of which the last four were made in the field

Case No.	Farm.	Age in Weeks.	Tonsil.	Lung.	Liver.	Spleen.	Heart.	Marrow or Pus.	Prominent Lesions.
695	6	12 days	L	Neg.	†	..	..	L	Anaemia ++. Emaciation ++. Pustular dermatitis.
210	5	2	C	†	†	..	..	..	" +++.
671	2	3	..	C & L	+	+	+	..	" ++.
151	9	4	+	Neg.	+	Neg.	Neg.	..	" +++. Congestion of lungs. Peritonitis.
202	4	4	C	C	C	C	C	..	" +. Adenitis.
930	4	5	C	Neg.	†	†	..	..	" +++. Emaciation +++. Coccidiosis.
699	7	6	C	C	Neg.	Neg.	..	..	" ++. Congestion of lungs. Enteritis.
673	2	10	..	+	"	"	†	..	Broncho-pneumonia. Lungworms. Emaciation ++.
152	9	16	Neg.	L	L	L	L	L	Congestion of lungs.
785	3	10	..	C	..	..	..	..	" "
513	2	12	..	?	..	?	..	C	Pneumonia. Peritonitis.
458	1	20	..	..	..	..	..	C	Adenitis. Abscesses of lungs.
643	8	62	..	?	..	C	..	..	Congestion of lungs and spleen.

Notes: + = B.H.S. was not grouped. Neg. = B.H.S. not found in cultures. ? = Cultures too contaminated for diagnosis. † = Cultures sterile.

Table II

Showing the Incidence and Mortality attributed to the B.H.S. Infection among Pigs of three age groups preceding Vaccination

Farm.	Sows and Boars				Sucklings.			Stores.		
	Total.	Farrowed.	Affected.	Deaths.	Total.	Affected.	Deaths.	Total.	Affected.	Deaths.
1	..	..	..	..	..	..	..	20	15	1
2	?	?	?	?	?	?	?	?	?	?
3	..	..	..	..	..	..	..	7	3	1
4	24	10	8	nil	90	90	45	..	..	..
5	12	4	4	"	42	42	29	..	..	..
6	8•	1	nil	"	11	11	2	..	..	..
7	26•	5	?	"	45	45	30	..	..	..
8	10•	3	3	1•	25	14	10	..	..	..
9	?	?	?	?	?	?	?	?	?	?
10	10	2	2	nil	(17)	(17)	(17)	..	..	..
11	..	..	..	..	..	..	..	9	9	3
12	..	..	..	..	..	..	.	60	40	1
	90	25	17	1	213	202 95 per cent.	116 49 per cent.	96	72 70 per cent.	6 6 per cent.

Notes: • = includes the stud boar. . ? = figures not obtainable.

the veterinary surgeon found 15 " looking very unthrifty, and most of them were coughing and had swollen glands of the neck like a horse with strangles." The pig with the biggest neck (458) was slaughtered and revealed enlarged and suppurating cervical and mesenteric glands with numerous caseating abscesses in the lungs. The B.H.S. group C was obtained in pure culture from one of the cervical lymphatic glands, which was filled to the size of a goose egg with porcelain white caseation having the consistency of an unripened cream cheese.

We recovered the B.H.S. from the surface of the tonsils of two living and six dead pigs, though we could find no abnormality in the tonsils. Probably, in pigs, as we have found in the B.H.S. infection of " carrier " dogs, the B.H.S. multiplies in the mucus covering the tonsil, whence we assume it invades the local lymphatic system.

Dermatitis Syndrome.—At the waning of the premonitory fever and with improvement in appetite and general well-being (*i.e.*, about the fourth or fifth day) some sucklings showed a fleeting erythema, occasionally with petechiae, over the ventral surface of the body, also on or around the ears. The erythema was followed by domed or flattened pustules which tended to localise in the inguinal region, inner surface of the thighs, along the dorsum and tail, around the eyes, on the borders of the lips or on the edges of the ears. On rupture the pustules were replaced by circular scabs composed of several concentric layers darker at the centre and lighter at the periphery, which resembled large fish-scales when peeled. The scab stage was accompanied by pruritus. On one sow the scabs persisted for three weeks. The erythematous stage was not observed in sows and stores.

In some cases superficial abscesses containing a white or yellow-tinted caseation arose from a collection of closely aggregated pustules; in other cases no lesions preceding the abscesses were noted. On rupture the abscesses developed into ulcers covered by a greenish-yellow caseation mixed with dirt and blood clot. Common sites for these abscesses and ulcers were the snout, cheeks, tail, front of carpus and on the fetlocks and coronets. Some ulcerated tails became gangrenous; the whole tail of one suckling sloughed off. Cultures made from the caseous contents of one ulcer on the cheek of 695 (Table 1) produced the B.H.S. group L mixed with *Fusiformis necrophorus*.

Puerperal Syndrome.—We have no record of abortions, dystocia, high fever in the puerperium or death of young during farrowing. The signs of the puerperal syndrome were as mild as those of the catarrhal and dermatitis syndromes in sows. The puerperal syndrome was characterised by a vaginal discharge varying from a colourless watery leucorrhoea to a blood-tinged or dark brown viscid exudate which dripped so slowly that usually it congealed as a glutinous blob at the lower commissure of the vulva. In one sow a thick blood-stained vaginal discharge persisted for three weeks. The infected sows were lethargic and almost invariably by the end of the first week they were emaciated, moreover their poor state of nutrition might persist for several weeks.

The two following cases of mastitis remind us that acute puerperal infection is a possibility. On farm 10 two sows, within a few hours of farrowing, collapsed and developed acute mastitis. They had no milk for their youngsters, totalling 17, all of which died by the third day *p.p.* From one of these sows we received a sample of the mammary exudate taken on the sixth day *p.p.* It was a yellowish-green glutinous pus, from which the B.H.S. group E was isolated.

We observed two interesting cases on farm 8. Sow 522, two days after an uneventful farrowing, went off her food, became very lethargic and showed a vaginal discharge. On the fifth day she developed some pustules along the back and loins. On the sixteenth day leucorrhoea was still present when her vaginal swab was taken (it was negative). By that date she had lost condition, but kept up a good flow of milk for her five sucklings, all of which revealed the catarrhal syndrome, and two of them also had dermatitis. One of them died on the 21st day, but was not post-mortemed; the remainder were culled as " piners " at weaning. The B.H.S. group C was isolated from the vaginal swab which was taken from sow 523 14 days before she farrowed. At the swabbing she appeared to be in good health, but during the day preceding farrowing she became very lame and both hind fetlocks were swollen, hot and tender. After farrowing she was very lethargic for several days, but retained a satisfactory appetite and produced a good flow of milk. She then developed a mild catarrhal conjunctivitis which persisted for about four weeks. She reared her eleven sucklings without mishap, but was still stiff on both hind legs when her litter was weaned.

Epidemiology

The 27 cases from which the B.H.S. was recovered ranged from a 12-days-old suckling to a 2-years-old sow. Individual sucklings from three known infected litters and all nine sucklings of sow 521 (Table 3) died about the third day *p.p.*; though none of the field post-mortems on these very young sucklings was sent for bacteriological confirmation we think it reasonable provisionally to regard them as positive cases. The fact that the onset of symptoms in 695 (Table 1) was observed on the fifth day *p.p.* supports the clinical observation that death from the B.H.S. infection certainly may occur within three to seven days of birth. Furthermore, the incubation period for the stud boar 643 (Table 1) was three days.

In Table 2 we have arranged the crude figures supplied by our clinical colleagues for the incidence and death rates. The 17 sucklings of the two mastitis cases on farm 10 began dying within a few hours of birth and all were dead by the third day *p.p.* As none of them was seen alive or post-mortemed by the veterinary surgeon we have excluded them from the totals.

Among the sucklings of the five farms, 4, 5, 6, 7 and 8 the mean incidence was 95 per cent., with a mean death rate of 49 per cent. Excluding the litter of eleven sucklings on farm 8, which revealed no signs of ill-health although their mother (523) was infected, the incidence was 100 per cent. and the death rate varied between 20 to 70 per cent. (mean of 60 per cent.). Among store pigs the mean incidence was 70 per cent. Their mean death rate of 6 per cent., which included one slaughtered for diagnosis, is evidence of a considerable increase in resistance to the infection. These death rates among sucklings and stores do not represent the owner's whole loss from the B.H.S. infection among his young stock. Detailed records of morbidity were not kept, so we can offer no more than the general impression of our clinical colleagues that approximately one-third to one-half of the survivors failed to thrive and were culled.

For adults the figures reveal a further increase of resistance. The only fatal case was the stud boar of farm 8. Possibly the mean incidence of 19 per cent. among 90 sows and boars is an understatement. From our own field observations we appreciated the difficulty of conducting a thorough clinical examination of sows on open-range. A sow's head plastered with semi-liquid muck is not the best of subjects for determining a mild conjunctivitis and a wateriness of the nostrils. Possibly a few cases among the non-pregnant sows were overlooked.

A few tentative views can be offered with regard to the mode of transmission. In Table 3 we have summarised the results of the bacteriological examination of the vaginal swabs of 15 affected

TABLE III

Showing the Results of the Bacteriological Examination of the Vagina Swabs of 15 affected Sows

Sow.	Farm.	Farrowed.	Swabbed.	Group of B.H.S. Isolated.	Litter. Live Births.	Litter. Died.
991	4	18 Jan.	14 Mar.	+	9	
992	4	? "	14 "	C	10	
994	4	? "	14 "	Neg.	8	24
995	4	? "	14 "	C	8	
996	4	? "	14 "	C	10	
931	4	27 Feb.	29 "	C	10	all reared §
932	4	22 "	29 "	C	9	1 destroyed §
933	4	23 "	29 "	C	11	all reared §
281	5	6 April	17 April	C	11	10
282	5	3 "	17 "	†	11	9
283	5	9 "	17 "	C	12	4
284	5	11 Feb.	17 "	C	8	6
521	8	12 August	30 July	Neg.	9	9
522	8	14 July	30 "	"	5	1
523	8	13 August	30 "	C	11	nil

Notes: + = B.H.S. was not grouped. Neg. = B.H.S. not found in cultures. † = Cultures sterile. § = See text under vaccination for note on these sucklings.

sows. Two sows (521 and 523) were swabbed before, and 13 after, farrowing. The vaginal swabbing of sows on open-range is not without its difficulties, so that it is an open question whether the four negative swabs were due to errors in technique or to the absence of the B.H.S. from the vagina. Deaths occurred in the litters of each of the first five sows in Table 3, but owing to some confusion in the marking of three dead sucklings we have only recorded the total death rate, *i.e.*, 24. Later, reference will be made to the survival of the litters of sows 931, 932 and 933, all of which were vaccinated. The results of these vaginal swabs along with the clinical observations point to the sow as the source of the infection of her sucklings, possibly through contact with her vaginal discharge *p.p.* From the fact that the stud boar on farm 8 developed the infection within 72 hours of contacting sow 523 we might infer that he infected himself when nuzzling her vulva previous to coitus.

We failed to improvise a satisfactory technique for obtaining uncontaminated tonsil swabs of adults. The isolation of the B.H.S. from the mucus covering the tonsil of two live and six dead sucklings and stores does, however, point to the possibility of the transmission of the infection by droplets, or through contamination of the swill and surroundings by infected saliva and discharges.

Vaccination

Autogenous formalised whole culture vaccine was administered on six farms (4 to 9 inclusive) as a *curative* at 48-hour intervals in six doses each of 2 c.c. for infected sucklings and of 5 c.c. for their sows. As a *preventive* it was administered at intervals of seven days in three doses of 1, 2 and 3 c.c. to sucklings and 5, 10 and 15 c.c. to adults. No change was made in the environmental conditions of the pigs.

The owner of farm 8 was enlarging his breeding stock by purchases and gave permission for alternate sows and their litters to be left unvaccinated. Within four weeks of the beginning of vaccination swine fever was introduced by some new purchases; the epidemic spread rapidly through the breeding field and ended our one opportunity of a controlled experiment. The results of vaccination on farms 4, 5, 6 and 7 are summarised in Table 4; those from farm 9 were not obtained.

Curative vaccine was administered to 20 sows, of which at the time twelve were clinically affected. All made uninterrupted recoveries. The 82 sucklings were observed for not less than three and not more than five weeks following their first dose of the vaccine. During this period of three to five weeks the sucklings were weaned and graded; 74 were regarded as clinically recovered and were sold, while eight were culled as "piners" for emergency slaughter. None of the sucklings died within the three to five weeks—a sharp contrast to the pre-vaccination mortality (Table 2).

Preventive vaccine was administered to 282 sucklings (born after their sows had been vaccinated) and to 50 adults, which comprised breeding sows, non-breeding sows and stud boars. With the exception of three sows and their litters no clinical signs of the infection were seen in the sucklings and adults; the former were observed until weaning and most of the later for approximately six months. The exceptions were the three sows on farm 4 (931, 932 and 933, Table 3) which farrowed before the completion of their course of vaccine. They and their 30 sucklings (which received their first dose of vaccine within their first week) developed signs of the infection, but all recovered without incident except suckling 930 (born of sow 932). This suckling at five weeks of age was a "piner" and was slaughtered for investigation. The *post-mortem* examination revealed coccidiosis complicating chronic toxaemia due to the B.H.S., which was recovered from the tonsil mucus (Table 1).

TABLE IV

Showing the Death Rate among Sucklings before and after the administration of Autogenous Vaccine. No Deaths occurred among the Adults after Vaccination

Farm.	Before Vaccination, Death Rate of Sucklings.	Adults Vaccinated. Curative.	Adults Vaccinated. Preventive.*	Sucklings Vaccinated. Curative.	Sucklings Vaccinated. Preventive.	After Vaccination, Death Rate of Sucklings.
4	50 per cent.	10	14	45	122	1 (slaughtered)
5	69 "	4	8	13	40	nil
6	18 "	1	7	9	35	"
7	66 "	5	21	15	85	"
		20	50	82	282	

Notes: * = includes the boars also the sows which were not bred from.

The results of curative and preventive vaccination are encouraging and may well warrant its adoption in general practice. But judgment must be reserved until adequate controlled investigations have been recorded. It is not enough to take clinical recovery or the absence of clinical signs as criteria of the vaccine's efficacy. The criterion for whatever therapeusis is administered must be freedom from infection as determined by the bacteriological examination particularly of tonsil and vaginal or prepuce swabs.

We are without evidence of how long and under what circumstances the B.H.S. can be carried by apparently healthy pigs. The owner of farm 4 told us that in their previous litters in 1939 he had observed the infection among the sucklings of the five sows, 991, 992, 994, 995 and 996. Also, the owner of farm 5 assured us that the litter born in 1939 to sow 284 had been infected. On farm 2 the infection in 1938 began on the breeding field and spread to the fattening sheds; no specific treatment was given and despite the most drastic culling the epidemic persisted for at least nine months. After this experience the veterinary surgeon in attendance at farm 2 was sure that what he had regarded in 1937 as swine erysipelas on the breeding field had been the B.H.S. infection. In all the breeding farms the onset of the epidemic was correlated with breeding. It seems to us that the carrier sow is the likely explanation of this "carry over" from one breeding season to another.

The contagiousness of the B.H.S. infection, its high incidence among young stock and high mortality rate among sucklings call for prompt and effective measures by the practitioner. For precision of diagnosis and its differentiation from nutritional anaemia, influenza and swine fever, collaboration between practitioner and laboratory is required in the examination of tonsil, vaginal and prepuce swabs, pus, milk, urine and faeces.

IMPORTATION OF STORE CATTLE FROM EIRE

An Order has been made by the Agricultural Departments of Great Britain and Northern Ireland relaxing the restrictions at present in force on the importation of store cattle from Eire. Licences will still be required for the importation of cows in milk, cows and heifers in calf, and bulls. The removal of the existing restrictions on the importation of other classes of cattle will enable farmers to secure supplies of young dairy heifers and yearling beef cattle.

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Mode of Occurrence of Fatty Acid Derivatives in Living Tissues.—The Food Investigation Board of the Department of Scientific and Industrial Research has just issued Food Investigation Special Report No. 52*, which is a review of present knowledge of the mode of occurrence of fatty acid derivatives in living tissues.

It deals with the types of fatty acid derivative occurring in lipoidal extracts, with the dynamic state of lipoids in the tissues and mainly with the lipoid-protein and lipoid-carbohydrate complexes of animals and plants. The available evidence concerning these complexes is considered according to the experimental methods used—physical methods (histology, physical determinations), physiological studies (blood clotting, antigenic reactions), solvent extraction of tissues (animal tissues, vegetable tissues), experimental preparation of lipoid-containing complexes, isolation of natural lipoid complexes.

* Food Investigation Special Report No. 52—"The Mode of Occurrence of Fatty Acid Derivatives in Living Tissues," by J. A. Lovern, Torry Research Station. Published H.M. Stationery Office, price 9d. net.

THE VETERINARY RECORD

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LEY FARMING

ONE would no more expect the veterinary surgeon to be familiar with all the details of crop production than one would criticise the agriculturalist for not being conversant with the details of bacteriology, parasitology and preventive medicine in relation to animal husbandry. If, however, we are to take a long view and plan our work effectively it is essential that we should be familiar with the broad outlines of agricultural practice and particularly with any changes that are taking place, and we draw the attention of our readers to the annotation on soil fertility in this issue. Whilst no one would suggest that artificial manures and concentrated feeding-stuffs will cease to play an important part in agriculture, it appears that in the recent past too much attention has been paid by farmers and scientists to these two substances and that the importance of "good husbandry" has been somewhat neglected. It must be recognised that artificial manures can be used merely to "rob" the land.

It has been said that this tendency is evidence of the great influence which commercial interests exert on research, for "good husbandry" is not a marketable commodity, whereas artificial manures and concentrated feeding-stuffs are. Another example is common: although scientists are usually careful to name the substances, the properties of which they are describing, or the methods, machines or materials they are comparing, they evince a remarkable timidity whenever these substances, machines or materials are the property of any vested interest. In view of the extravagant claims which private firms are allowed to make regarding their products it is unfortunate that when scientifically ascertained facts are available the identity of the products is disguised. The custom is completely at variance with the ideals of scientific honesty and at the present time, when the public interest should take precedence over all other, it is doubtful if it is justifiable.

The provision of foodstuffs for our livestock is now a matter of vital urgency and even before the war foodstuffs were responsible for at least half the cost of milk production. The advantages claimed for ley farming by two world-famous scientists, who clearly have the welfare of our countryside at heart, will, therefore, attract the friendly attention of all interested in agriculture. For our own part it is obvious that ley farming raises many possibilities. It would help to provide the clean pastures necessary for raising young livestock free from diseases such as tuberculosis and Johne's disease and tend to reduce the amount of *Brucella abortus* infection on pastures. It is well known that old pastures become sheep or horse "sick" and the aphorism "permanent pastures perpetuate parasites" is well known. The effect of parasitic infestation is often insidious and not easily estimated, but manifestly it causes enormous losses in our flocks and herds. Whilst it is apparent that a great deal of research remains to be done it would appear that the system of ley farming offers possibilities of parasite control by the adoption of improved grazing methods.

"The crying need to-day is for experiments in animal health on generous lines as opposed to experiments on individual diseases: in the last resort these come back to experiments in animal management."

Weekly Wisdom

"I do feel that in the immediate future your (veterinary) profession is going to be in a kind of transition stage, that there will be a considerable passing over from the stage of the private practitioner, called to treat cases of sickness, to the position of the Medical Officer of Health who is called upon to prevent that sickness taking place at all; and what we have to do is to try and see that this transition takes place on a due basis of knowledge—that is, a basis of research, in which I am primarily interested, and also without injury being inflicted upon the individual in the process. That is a matter with which an Association like this (N.V.M.A.), dealing with the ethics of the profession, is most particularly concerned. . . ."—Sir Daniel Hall, K.C.B. (Chief Scientific Adviser, Board of Agriculture), 1919 (*Vet. Rec.*, 1919, Nov. 15th, p. 226).

CLINICAL COMMUNICATION

Stilboestrol and Hydrops Amnii*

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The subject, a shorthorn dairy cow, aged seven years, was seven and a half months pregnant. Examination showed tremendous distension of the abdomen with fluid, the appetite was in abeyance, no faeces had been passed for 24 hours but the temperature was normal and the animal appeared fairly comfortable. A foetus could be palpated through the left flank but not on the right. A diagnosis of hydrops amnii was made and the likely effect of stilboestrol considered, but as a first line of treatment, in order to overcome the alimentary stasis, two doses of magnesium sulphate with carminatives were left, each to be given with 4 lb. of molasses. The next day the animal's condition appeared to be much the same except that a small quantity of faeces had been passed; if anything the abdomen was slightly more distended. Stilboestrol dipropionate 25 mg. was then injected intramuscularly in the hope of inducing abortion and the owner instructed to report if any signs of calving were exhibited. In the absence of such news it was arranged for a further visit to be made after a lapse of three days, this period being decided upon in the light of the experiences related in the *Record* in connection with the use of stilboestrol in cases of mummified foetus. No word was heard, however, and on re-visiting, the cow was found to be perfectly normal in appearance, the appetite had returned, the rumen was full of food and a calf could be felt on the right side only. The owner stated that about ten hours after the injection large quantities of fluid were voided and the cow almost at once commenced to feed ravenously. Examination *per vaginam* showed the *os uteri* to be closed and normal in size and *per rectum* a live calf could be felt. As no immediate further attention seemed necessary instructions were given that the animal should be kept under observation.

Five weeks later she produced twin calves. Both were born dead but fully covered with hair, and from information obtained from the owner it appears certain that they must have been alive up to within a few days of their expulsion. The placentae were expelled normally and no attention either at parturition or thereafter was necessary.

The striking features of the case are the rapid action of stilboestrol and the fact that the calves were viable in the uterus for over a month following rupture of the amnion.

* Communicated to the Mid-West Division, N.V.M.A., Bristol, April 17th, 1942.

REPORT

[UNITED PROVINCES: Report of the Civil Veterinary Department, 1940-1941.]

The Annual Report of the Civil Veterinary Department of the United Provinces for the year 1940-1941 is a record of further progress along the lines which have been developed during recent years. There was a marked reduction in mortality from contagious disease, mainly due to the reduction of the mortality from rinderpest to less than half that of the previous year, though the disease existed in all districts.

Prophylactic measures against other contagious diseases such as haemorrhagic septicaemia, blackquarter and anthrax continued on the same lines as before, but the treatment of equine surra was interfered with owing to the difficulty of obtaining naganol. Bovine surra, on the other hand, was successfully treated with potassium antimony tartrate and considerable success was attained in the control of "bisi," a highly fatal disease of sheep and goats which is now known to be associated with extremely heavy infestations with immature forms of paramphistomes.

The number of animals treated in veterinary hospitals and dispensaries continues to increase and the number of these institutions was slightly increased despite the financial stringency caused by the war.

During the year further progress was made in all branches of the breeding operations carried out by the Veterinary Department. The numbers of stud bulls and buffaloes were considerably augmented and a Government scheme for the subsidisation of goat breeding is now in operation in a number of villages with a view to improving the Jumna Pari goats, some of which give high yields of milk. Progress is also being made in the improvement of local sheep.

In connection with these measures for the improvement of livestock, large numbers of local fairs and shows for cattle, horses, goats and poultry were also organised. The demonstrations given and films shown at these shows and fairs of the benefits to be derived from control of disease and the improvement of livestock of all kinds, are a most important factor in that improvement. A. O.

ANNOTATION

Soil Fertility

Ever since man ceased to wander in nomadic groups he has been confronted with the problem of maintaining soil fertility. The methods of solving this problem in various parts of the world would make a fascinating story, and it is a sobering fact that, until comparatively recent advances were made, some of the traditional customs of the East were far in advance of British agricultural methods.

It is known that the Russians have made great contributions to our knowledge of soil science and the whole subject has been presented in a lucid manner by Sir John Russell.[1] Michael Graham[2] has given a much simpler but very stimulating account of the subject in a small book which also describes the grazing habits of animals and methods of pasture management. The purpose of this annotation, however, is merely to emphasise some practical aspects of the problem which are of immediate importance.

Since the time of Liebig (1840) the value of artificial manures has perhaps been over-emphasised at the expense of other factors. Sir Albert Howard,[3] as a result of his Indian experience, lays great stress on the importance of humus in maintaining soil fertility; he has made extensive studies of the root systems of plants and claims that in humus-rich soil a "mycorrhyzal association" forms a direct fungus link between soil and root. The effect of humus on the physical properties of the soil is well known. Howard probably goes too far in his condemnation of the "manure bag" mentality and those who know the facts cannot accept all his statements concerning animal diseases; nevertheless, they may be interested in his views on the organisation of agricultural research although again they may not entirely agree with him. It appears, however, that the use of humus prepared by his method has produced remarkable results in tropical countries. An enormous amount of potential humus, in the form of town waste and sewage, is not being utilised in this country, but the difficulties of preparing humus by the *Indore Process* at the present time in Britain would appear to be very great.

There is, however, another method. By the correct use of crops and grazing animals implicit in the system of ley farming large quantities of humus can be produced in the soil itself.

During the period 1730-1830 Townshend and Coke, both of Norfolk, revolutionised British agriculture by popularising the turnip and red clover and so introducing the "four-course system." R. H. Elliot (1898), however, was the first to advocate a system of farming based on the long ley; his work has recently been described in the book by Michael Graham.[2] In our own time the Aberdeen and Tweedside farmers have practised ley farming and Sir George Stapledon, well known for his work on grassland improvement, is an enthusiastic advocate of this system. He fully realises the necessity of educating the public concerning any important endeavour and in conjunction with Mr. W. Davis has written a Penguin Special (No. 99)[4] on this subject.

To many people, and some even in the agricultural community, corn is a crop but grass is just grass. Ley farming introduces the concept of grass as a crop, the cheapest and most important source of food for our farm animals, particularly the cow.

Professor Stapledon and Mr. Davis contend that it is only under very rare conditions that a sod can be maintained in a healthy condition for an indefinite period and they do not believe that there is any permanent grass too good to be ploughed up. The temporary ley will yield more animal food than the best permanent grass or any cereal, and will, on the lowest estimate, be equal to that of roots or kale. Even when these yields are transcribed into units of human food the temporary ley still compares favourably with most arable crops. This, together with the low cultivation costs and the manurial value of the ploughed-in sod, due to its humus and chemical content, are claimed to justify the large-scale adoption of ley farming.

It is impossible to go into the evidence on which the above statements are made or the details of the seed mixtures, cultivation and grazing methods recommended, but it can be said that there are four essentials on which ley farming is based; mechanical power, *i.e.*, tractors and modern farm implements, improved strains of grasses and clovers, artificial manures, particularly lime, and grazing animals. It will also often be desirable to operate over large areas of land disregarding farm boundaries. As a working principle it would be sound to run a farm on two broad alternating systems; the one would involve a rotation primarily designed to produce cereal roots and hay (1-2 year leys), the other to produce grazing and silage (2-4 year leys) with green fodder crops and a small amount of cereals.

British agriculture, no less than any other, largely depends on livestock and again and again throughout the book the value of grazing animals in improving the sward is emphasised. In the reclaiming of rough pasture heavy grazing is essential and the ploughed-in sod that has been heavily grazed and is, therefore, impregnated with animal residues and biologically active, is an efficient, and much cheaper, substitute for farmyard dung.

The ploughing up of millions of acres of permanent grass satisfies the war-time desire to do something *active*, but already we have had warnings of the effect of this policy both on the numbers and health of our livestock. Stapledon and Davis say that it can do infinite harm, and that exceedingly rapidly, if we only think in terms of crops and are forced to reduce our head of livestock. It can, however, do infinite good, if we will think and act in terms of sensible rotations and regrass (now, in leys) as we go. Ley farming renders milk and corn production complementary. It would increase the cheapness and self-sufficiency of milk production, the health of the herds and the quality of the milk. It would also enable us to produce the crops we need and maintain the numbers of our livestock at a reasonable level, but above all it would maintain soil fertility for an indefinite period.

Before the war livestock production was coming to depend more and more on cheap imported foodstuffs and not on the proper cultivation of the land, many pastures were little more than exercising grounds for the cows and the enormous area of fourth rate derelict grassland was a disgraceful symptom of national neglect and *laissez-faire*. In the opinion of the authors, speaking agriculturally, the peace will be lost unless the war teaches us to dispense with permanent grass. "We must talk, think and plan in terms of leys—long duration leys if we like, in their proper sphere—but never again in terms of permanent grass." They say that ley farming contains within itself a stimulant favourable to enterprise and originality, and is likely to be the nursery from which will spring entirely new systems of farming. Wherever one turns there are interesting methods of farming each of which suggests the urgent need of exact experiments on generous lines. The crying need to-day is for experiments in farming as opposed to experiments in manuring; in the last resort these come back to experiments in rotations and systems of cropping.

References

1 Soil Conditions and Plant Growth. 7th Edit. Longmans Green & Co.

2 Soil and Sense. Faber & Faber, London, 1941.

3 An Agricultural Testament. Oxford University Press, 1940.

4 See also: The Plough-Up Policy and Ley Farming. Faber & Faber, London, 1939; and various War Food Production Advisory Bulletins published from the University College of Wales, Aberystwyth.

John Francis.

ABSTRACTS

[CAUSES OF STILLBIRTH IN SWINE AND AN ATTEMPT TO CONTROL IT. Asdell, S. A., and Willman, J. P. (1941.) *J. Agric. Res.* **63**. 345.]

The percentage of pigs dying just before or during birth in the Cornell University herd over a period of five years was 6·6. The incidence had little relation to breed or to sex, but tended to be higher in the case of litters from the older sows. Losses were higher in the spring than in the autumn, which may have been related to the fact that, before the spring farrowing, the sows had only run for one month on pasture, while they were out all the time during the autumn gestation. The losses tended to occur among the under-sized piglets, and in those delivered in the later stages of farrowing. As many of the stillborn pigs showed signs of having been suffocated during the lengthy parturition, it was thought that the losses might be reduced by accelerating the birth process. During one period, when all the sows were given a subcutaneous injection of pituitrin as soon as they commenced farrowing, the incidence of losses was, in fact, reduced to 2·9 per cent. However, in the next period, when only alternate sows were injected, the incidence of stillbirths was found to be lower, and not higher, in the case of the uninjected sows (2·4 per cent. as opposed to 4·3 per cent. in the case of the injected sows). Thus it is not yet clear whether such injections are of value, but the authors consider the method to be worthy of further trial.

A number of the stillborn pigs were examined; many of them showed signs of thyroid deficiency—superficial oedema and enlarged thyroids; others showed disproportionate organ weights, *e.g.*, over-large hearts, while others showed focal accumulations of white blood cells in the liver (white spots) and blood-pigment deposits in the spleen (black spots). In a high proportion of cases the cause of death was not obvious. No *Brucella suis* infection was noted.

E. C.

[THE HOST SPECIFICITY OF SHEEP AND CATTLE HELMINTHS, WITH PARTICULAR REFERENCE TO THE USE OF CATTLE IN CLEANSING SHEEP PASTURES. ROBERTS, F. H. S. (1942.) *Austral. V. J.* **18**. 19-27.]

Although a number of species of helminths are common to both cattle and sheep, the existence of strains which are not readily interchangeable between these hosts has been suggested; this led Roberts, in Queensland, to carry out experiments designed to find out whether cattle could be used with safety to cleanse sheep pastures of helminths under a system of rotation. For six weeks three lambs, subsequently found at *post-mortem* examination to be infected with 14 species of worms, were allowed to graze over a clean pasture. The lambs were replaced by five three-months-old calves, reared free of all helminths. Owing to dry conditions the calves were removed to concrete pens after six weeks' exposure, where attempts to reinfest them with larvae cultured from a lamb's faeces were made. Roberts found that seven species were transferred to calves, *viz., Haemonchus contortus, Trichostrongylus colubriformis, T. axei, Strongyloides papillosus, Cooperia curticei, Trichuris parvispiculum* and *Moniezia expansa.* All the calves showed a resistance to infestation by *H. contortus* from sheep because after six weeks' grazing they had only moderate infestations which were rapidly eliminated; in addition, only a small number of worms established themselves after reinfestation with larvae from sheep, even after a single passage through cattle. Calves not susceptible to larvae from sheep were, however, readily infested with larvae of a pure cattle strain. *T. colubriformis* established itself in the calves in fairly large numbers, but the infestations did not persist; *T. axei,* on the other hand, occurred in very small numbers and were gradually eliminated. *Cooperia curticei* resembled *H. contortus* in behaviour except that the infestations were larger and persisted longer, and Roberts notes that, from field evidence, it is believed that the former parasite can persist in cattle for long periods only in the presence of sheep. Very heavy infestations of *S. papillosus* were rapidly acquired by all calves and then almost as rapidly disappeared. The short persistence of *M. expansa* in two calves indicated that the tapeworm is not well adapted to cattle, whereas *T. parvispiculum* from sheep appeared to be fairly well adapted to them. The author considers that cattle could be used with advantage to cleanse sheep pastures, in Queensland, of *T. colubriformis* provided the animals were allowed to remain on the pasture for some months. With *H. contortus,* the other important species to be considered, such a procedure would be dangerous because (1) low-grade infestations may be set up in cattle, particularly young cattle exposed to *H. contortus* from sheep, (2) sheep are readily susceptible to larvae from sheep after passage through cattle, and (3) sheep may be easily infested with larvae of a pure cattle strain. It is also possible that in time the sheep strain may gradually adapt itself to cattle.

J. N. O.

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[I.—A YOLK BUFFER PABULUM FOR PRESERVATION OF BULL SEMEN. PHILLIPS, P. H., and LANDY, H. A. (1940.) *J. Dairy Sci.* **23**. 5. 399;
II.—PRESERVATION AND EVALUATION OF BULL SEMEN. PHILLIPS and LANDY. (1940.) *J. Dairy Sci.* **36**. 4. 179.]

I.—Bull semen can be kept for 200 hours or longer *in vitro* using the technique employed by the authors.

The method employed is to add three parts of a solution consisting of egg yolk to nourish the sperm cells, and a sodium-potassium-phosphate buffer solution to bring the *p*H to 6·7-6·8; keeping the whole at 41-50° F. Examination of sperm for motility after storage in this way can be used as a good indication of the bull's fertility. If sperm is alive after 200 hours, it is an indication of very good fertility. Sperm which lives for 150-200 hours represents good fertility, 100-150 hours fair fertility, and under 100 hours very poor.

The authors have found a connection between the ascorbic acid content of blood plasma and semen and the fertility of bulls.

Low ascorbic acid readings represent low fertility. The normal reading should be between 0·2 and 0·4 milligrammes per 100 c.c. of blood and 3 to 7 milligrammes per 100 c.c. of semen.

II.—In the other article the authors give the histories of a few bulls of low fertility treated by the injection of ascorbic acid with promising results.

F. D.

Inspectors under the Fertilisers and Feeding Stuffs Act, 1926, are to have the powers already exercisable by sampling officers under the Food and Drugs Acts to take samples of food or forage free from the restrictions of any other order made by the Minister.

QUESTIONS IN PARLIAMENT

National Milk Testing Scheme

Dr. SUMMERSKILL asked the Parliamentary Secretary to the Ministry of Food whether, under the National Milk Scheme, it is proposed to ensure that producer retailers only sell milk of a high standard of purity; and how will this be enforced?

Mr. HUDSON: I have been asked to reply. The main purpose of the National Milk Testing Scheme is to test the keeping quality of milk. All milk sold will be liable to test under the scheme. These arrangements, however, in no way interfere with the powers and responsibilities of local authorities conferred by the Food and Drugs Act, 1938, and Orders and Regulations made thereunder. My right hon. Friend is sending the hon. Member a copy of the full text of the scheme.

Mr. DAVID ADAMS asked the Minister of Health whether, in view of the continued production and sale of non-designated and other milk dangerous for human consumption, it is now intended to restore the powers of rejection of such milk to medical officers of health, of which they were deprived upon the introduction of the National Milk Scheme?

Mr. E. BROWN: The National Milk Scheme does not affect any powers of medical officers of health in relation to the quality of milk.

Mr. ADAMS: Is the Minister aware that medical officers of health have the power of rejection of unfit milk in the matter of milk in schools? Why should not the general public be similarly protected?

Mr. BROWN: There is a misunderstanding. I would point out to my right hon. Friend that the National Milk Scheme does not give this power to medical officers.

The following Question stood upon the Order Paper in the name of Mr. David Adams:—

To ask the Minister of Health whether, as it is not intended to pasteurise all milk, it has now been decided to raise to health standards farms at present producing milk dangerous for human consumption.

Mr. ADAMS: On a point of Order. I addressed this Question to the Minister of Agriculture, but it has reached the Minister of Health. Is not the Minister of Agriculture the correct Minister for a Question dealing with cows and cow sheds?

Mr. SPEAKER: It appears to be a matter for the Minister of Health.

Mr. E. BROWN: It is for local authorities to carry out the powers they possess under the Milk and Dairies Order, 1926, in relation to conditions of production at all farms. The new Milk Testing Scheme, and the advisory work in connection with it, should serve to supplement and assist in this work.

Mrs. TATE: Will the Minister on no account encourage the ruination by pasteurisation of one of our few natural foods?

Major C. S. TAYLOR: Is not the Minister aware that in certain foreign countries they will not feed non-pasteurised milk to valuable animals?

Dr. EDITH SUMMERSKILL: Is it not a fact that 13,000 cases of pulmonary tuberculosis have been notified this year and that experts have told the right hon. Gentleman that 40 per cent. of those cases were due to milk infection? Has he no responsibility in this matter?

Mrs. TATE: Experts seldom agree.

Mr. ADAMS: Are not many of the cows producing milk for human consumption reeking with disease?

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Livestock Auctioneers

Mr. WOODS asked the Parliamentary Secretary to the Ministry of Food the total amount of money paid by the Government to livestock auctioneers by way of compensation and for any other services rendered by them, respectively; the number of livestock auctioneers fully occupied in the service of his Department, and the total annual remuneration paid to them?

Mr. MABANE: No payment is made by my Department to livestock auctioneers by way of compensation. Livestock auctioneers have acted as county chairmen of auctioneers, district chairmen of auctioneers, Government buyers and certifying officers. The sum of £498,968 has been paid in respect of salaries and expenses of these part-time officers. In addition, the sum of £2,382,504 has been paid in respect of headage charge on the number of stock handled at the markets. The number of livestock auctioneers fully occupied in the service of the Ministry in connection with the Meat and Livestock Control Scheme is nine. The total of their salaries is £6,890 per annum.

Mr. WOODS: Is any other Department—the Ministry of Agriculture, for instance—paying sums to these people?

Mr. MABANE: I have no knowledge of any other Department doing so. If the hon. Member has any information, perhaps he will let me have it.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

July 4th.—Meeting of the Society of Women Veterinary Surgeons at the Conway Hall, W.C.1, 2.30 p.m.

July 10th.—Annual Summer Meeting of the Lancashire Division, N.V.M.A., at the Liverpool University Veterinary Field Station, Neston, 2.15 p.m.

July 17th.—Meeting of the Mid-West Division, N.V.M.A., at Bristol, 2.15 p.m.

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Veterinary Investigation Officers for Scotland

In view of the proven value of the Veterinary Investigation Officer service, the profession will welcome its extension into Scotland. At the annual meeting of the Governors of the West of Scotland Agricultural College, a letter was read from the Department of Agriculture for Scotland regarding the appointment of three veterinary investigation officers for Scotland, one to be attached to the area of each of the Agricultural Colleges. The communication made it clear that the officers would be in the same position as other advisory officers on the staffs of the colleges so far as terms of appointment were concerned, and in the course of their work, which was to give advice and to conduct local investigations into animal diseases, they would make contact with practising veterinary surgeons.

As the duties of the investigation officers would entail a certain amount of research, the Department considered that that work should be carried on under the general supervision of the Scottish Board of Research in Veterinary Science, which would ensure that the officers would be brought into contact with representatives of veterinary science, including the Veterinary Colleges and the Animal Diseases Research Association.

It was agreed, on the suggestion of the Chairman, that the Teaching and Staff Committee should make the appointment of the investigation officer for the College area, and that the co-operation of a representative of the Scottish Board of Research in Veterinary Science should be invited when applications for the post were under consideration. That Board is also to be asked to send a representative when the Research Committee of the College proceeds to discuss a plan of work to be undertaken by the investigation officer.

* * * * *

Royal (Dick) Veterinary College

In terms of the constitution of the College, the veterinary profession in Scotland have elected Major J. Gillray McGregor, M.R.C.V.S., Paisley, William Nairn, Esq., M.R.C.V.S., Blairgowrie, and H. W. Robson, Esq., J.P., M.R.C.V.S., Laurencekirk, as their representatives on the Governing Body of the College for the three years commencing July 1st, 1942.

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Roll of Honour

Prisoners of War.—We regret to learn that, as announced in Casualty List No. 856 (Officers), dated June 22nd, 1942, Majors C. W. Heane (9354) and K. S. Simpson (12826) are prisoners of war.

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PERSONAL

Birth.—Holroyd.—On June 28th, to Phyllis, wife of Harry Holroyd, Simmons Street, Blackburn, a son.

. . . . .

Mr. Alastair Norman Worden, B.Sc., M.R.C.V.S., of St. John's College, Cambridge, who has secured second-class honours in the University of Cambridge Natural Sciences Tripos Part II (Biochemistry), having read Part I (Chemistry) in 1940-41, has been awarded the degree of B.A. (Cantab.).

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R.C.V.S. OBITUARY

Weir, David Scott, 65, Gloucester Street, Aberdare, Glamorgan. Graduated Glasgow, May 20th, 1898. Died June 20th, 1942; aged 66 years.

GENERAL OBITUARY

Lord Glanely

The many members of the veterinary profession who knew him personally will join with others interested in the breeding of thoroughbreds in mourning the loss of Lord Glanely, who was killed in an air raid on a West Coast town early last Sunday morning.

Fo many years Lord Glanely had been one of the leading owners and most successful breeders of racehorses. He won the Derby with Grand Parade in 1919, the St. Leger in 1930 with Singapore and in 1937 with Chulmleigh, the Oaks with Rose of England in 1930, and the Two Thousand Guineas with Colombo in 1934. The Racing Correspondent of *The Times* states that Colombo was probably his best horse and is now making a great name for himself at the stud, and adds: "Lord Glanely owned and took the greatest interest in several studs near his home. Few men have done more for racing and breeding in recent years, and he fully deserved his election to the Jockey Club in 1932. His greatest successes as an owner, apart from the Derby win of Grand Parade, were achieved when Captain T. Hogg was his trainer. Captain Hogg retired a few years ago from training, but started again this season, and at the request of Lord Glanely trained for him a number of horses. Other horses were being trained for Lord Glanely at the time of his death by Lawson at Manton, who won many races for him last season, and by Basil Jarvis at Newmarket."

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FOOT-AND-MOUTH DISEASE

The number and range of outbreaks of foot-and-mouth disease has unfortunately increased considerably since our last announcemet. Further outbreaks have been confirmed among cattle at Morebath, Devon; near Gloucester and at Llandudno; also among pigs at Powick, Worcs, and at Gunthorpe and Mapperley, Nottinghamshire.

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VALUE OF REGULAR SUPERVISION OF DAIRY HERDS

"The value of the National Veterinary Scheme to milk producers has been demonstrated in a remarkable way by a number of Hampshire farmers," writes the Farming Correspondent of *The Reading Mercury* in a recent issue of his paper, and proceeds: "It is nothing new for them to put their herds under the constant care of a veterinary surgeon, for they have been 'on the panel' with a county practitioner for periods up to ten years.

"Although the new scheme has been operating for only a few weeks, 33 milk producers have already entered into an undertaking with this practitioner for the control of mastitis, sterility, contagious abortion and Johne's disease at fixed fees and by approved methods. The undertaking was a formality for many of them as their herds were already subject to a private system of control almost identical with that now officially sponsored.

"Each of these pioneers speaks enthusiastically of the big drop in cow wastage, and the considerable cash value resulting from regular supervision by a veterinary surgeon. Herds, in some cases, have been saved from absolute extinction."

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FEEDING-STUFFS FOR LIVESTOCK

Rationing Arrangements for Next Winter

In a recent announcement relative to the above the Ministry of Agriculture states that supplies of feeding-stuffs available under the rationing scheme are seriously affected by urgent demands on shipping for war purposes. By next winter, most farmers will be more self-supporting, and taking this factor into consideration the following rationing arrangements have been made.

Dairy Cows.—Rations for dairy cows will continue to be based on the quantity of milk sold. Dairy farmers were advised in good time to grow enough on their own farms for maintenance plus the production requirements of the first gallon of milk, but the position is such that it is reasonable to hope that it will be found possible during the winter to allow rations on all milk sold in excess of $\frac{7}{8}$-gallon per cow per day.

On the assumption that generally speaking the farmer will find it easier to provide cereals than protein from his own crops, the coupon issue will be adjusted so that protein coupons will be allowed on all sales in excess of $\frac{1}{2}$-gallon per cow per day, and the cereal coupon issue correspondingly reduced. In addition the proportion of protein to cereal in the allowance will be increased from $\frac{1}{4}$ to $\frac{1}{3}$.

Rations will be allowed at the rate of 1 unit protein and 2 units of cereals for each 80 gallons (or 4 1/5 lb. per gallon) sold, subject to the deduction of the ¾-gallon per cow per day and the protein for cereal adjustment already indicated.

Committees will have authority to accept a lower standard of self-sufficiency from dairy farmers where a substantial part of the acreage of the holding is devoted to wheat or other essential crops, or where for other good reasons the farmer has found it impossible to provide fully for the first ¾-gallon.

The general issue of a household milk allowance of ½ cwt. per month, irrespective of the number of cows kept, will not be continued next winter. Where no milk is sold, but not more than two cows are kept for supplying the milk requirements of the household, and workers on the farm, an allowance of 28 lb. of protein per month will be granted.

Pigs and Poultry.—At present, rations are allowed for pigs and poultry on the basis of one-sixth of pre-war numbers subject to an acreage deduction. As from September 1st next, it will be possible to allow rations for only one-eighth of pre-war numbers; it will also be necessary to increase the deduction in respect of the acreage of the holding.

In order to provide for the needs of farrowing sows, it is proposed to grant a small allowance of feeding-stuffs, on application by the pig-keeper, when his sow is about to farrow. This allowance will not be affected by any acreage deduction, but issues will only be allowed in respect of a proportion of the number of breeding sows kept before the war.

Coupons for pigs and poultry will be issued in the proportion of one of protein to five of cereals.

Ration allowances for domestic pigs and domestic poultry are at present under consideration.

Other Stock.—Full details regarding ration proposals for certain other livestock, *e.g.*, in-calf heifers, agricultural horses, etc., will be announced as soon as possible.

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LEGAL NOTES

Alleged Milk Fat Deficiency: Poor Feeding Plea Accepted.—Three farmers and producer-retailers of milk, at Ilfracombe, successfully defended summonses alleging sales of milk deficient in fat by raising the pleas that the milk was as it came from the cows, and that the deficiency in fat was due to the war-time conditions under which the cattle were having to be fed.

Dismissing the summonses, the Chairman said the bench felt that the feeding-stuffs were not of the same quality and there was also the question of cake shortage. They wondered that under the war-time conditions the Government has not altered the standard of milk required.

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The accounts of the Hackney Horse Society presented at the annual meeting held in London showed a credit balance despite a difficult year. The Society is to give medals to prizewinners in competitions of the Driving Club.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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SCHEME FOR THE CONTROL OF DISEASES OF DAIRY CATTLE

Sir,—A meeting of the Cornish Section of the Western Counties V.M.A. met at Truro, on Wednesday, May 27th. Representatives of twelve practices were present, and they instructed me to write and inform you that the following resolution was unanimously adopted: "The existing veterinary service, together with the type of farming practised in Cornwall, renders the operation of the Scheme unnecessary in this county."

During a general discussion of the scheme, anxiety was expressed as to the "Form of Undertaking." It was considered to be not sufficiently specific. Evidence in support of this view is to be found in *The Veterinary Record* of May 16th, in which, at a meeting at the Farmers' Club, Whitehall Court, S.W.1, the Chairman of the Survey Committee is reported to have said, in connection with the use of certain biological products for the treatment of infertility, that "It was quite obvious, with the price of these products, they could not be utilised within the scheme; they must either be provided as an extra and paid for by the farmer, or they must be provided by the Government, possibly at a reduced price."

The question was raised as to whether an owner might not reasonably expect to have an aborting cow calved, or foetal membranes removed under the contract, and it was thought that as the form of undertaking stands, it would be difficult to exclude these things.

At a time when petrol rations are being cut, it was asked if there is an assurance that extra petrol will be made available for the purposes of the scheme?

Yours faithfully,
S. J. Motton, *Hon. Secretary*,
Western Counties Division, N.V.M.A.

Penzance.
May 28th, 1942.

. . . . .

[N.B.—With reference to the queries raised in the above letter, the following notes will clarify the position of the Association and practitioners working under the scheme.

It can definitely be stated that in the consultations leading to the agreement upon the scheme for the control of certain diseases of dairy cattle, it was appreciated by all that the removal of foetal membranes after calving was not included in the work to be undertaken within the scheme.

With the exception of sulphanilamide, all substances which are definitely known to be of service in the control of the diseases specified and which the veterinary practitioner feels should be used in the particular instance, should be supplied by the practitioner. When research work and field trials indicate that new biological products or other preparations are of real value in the control of these diseases, discussions will take place between the three organisations concerned to see what arrangements can be made for their supply under the scheme. Whilst these products are in the experimental stage their use must be a matter for private arrangement.

With regard to petrol, the Ministry of Mines has expressed its appreciation of the need for the supply of petrol for the extra work to be carried out by veterinary surgeons under the scheme and it is to be anticipated that the necessary supplies will be available, the national situation permitting.]

* * * * *

INTRATRACHEAL INJECTIONS IN PARASITIC BRONCHITIS

Sir,—Having always been interested in parasitic worm diseases it gave me a great deal of pleasure to read Dr. Taylor's address on "Parasitic Bronchitis among cattle" (published in *The Veterinary Record* of January 10th, 1942), and also the discussion of this paper by the South Wales Veterinary Association. As Mr. F. V. John said, Dr. Taylor always approaches his work from the practical point of view. This I remember quite vividly from my examination days.

It surprised me and even disconcerted me, greatly, to read Dr. Taylor's statement that in the treatment of "hoose" intratracheal injections were of little or no use. Most of my student days and several months after qualifying were spent in Cumberland. In this county I know, and I think also in Westmorland and Northumberland, most veterinary practitioners have great faith in intratracheal injections. Indeed the controversial point was whether or not the skin at the site of injection should be incised prior to injection. The efficiency of the method was never questioned.

The mixture we used consisted of turpentine, carbolic acid, potassium carbonate and water. The dose varied according to age and condition and a one-and-a-half-year-old beast would receive about 5 c.c. No animals under six months were ever injected. Immediately following the injection violent expiration occurred. Coughing continued for some time after, gradually lessening in intensity. It may be that large numbers of parasites were expelled during this phase of violent coughing. My mentor naturally always stressed the fact that this treatment should be combined with good feeding, but I know that many of our clients looked upon the injection as a "cake substitute"! This is of topical interest in view of the present feeding difficulties.

Cumberland farmers are very keen judges of the "good doing" or otherwise of young cattle and the fact that many of them have all their young stock inoculated annually surely goes to prove that intratracheal injections are of some value in the treatment of parasitic bronchitis in cattle.

The method has never been tried out here because fortunately we have no "hoose."

I might add that, although received several weeks late, the *Record* is read keenly by all the veterinary officers out here, and this is usually followed by enjoyable if sometimes spirited discussion.

Yours faithfully,
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